

The Aroids of Borneo.

BY H. N. RIDLEY.

The island of Borneo is very rich in aroids, and the present list represents doubtless but a small portion of those which will eventually be found by collectors. I have attempted however to make it as complete as I could, and to record all species previously described together with a number collected by myself in a short trip to B. Sarawak, in 1903 and others obtained by Dr. Haviland some years previously. Dr. Engler in Malesia described a number collected by Dr. Beccari chiefly in Sarawak, but though I was working over Dr. Beccari's old collecting ground, I obtained a considerable number which appear to have escaped him.

The chief difficulty in the study of aroids lies in the very bad habit of some botanists and gardeners of describing species from leaves only. Aroids vary very much in the form and venation of their leaves, and leaf descriptions are quite worthless, and have led to great confusion. This is especially the case in Borneo aroids for many species possess very ornamental leaves and have been introduced as cultivated plants, and inadequately described and named.

CRYPTOCORYNE.

This genus of aquatic aroids seems to obtain its maximum development in Borneo though several species occur in India and the Malay peninsula and in islands of the archipelago. All the species in Borneo inhabit the jungle streams and rivers except the tidal river species *C. ciliata*.

C. ciliata, Fischer. Tidal Mud, Sarawak, (Beccari) Bishop Hose.

Common in most of the tidal rivers in mud in the Malay peninsula and islands.

C. ordata, Griff. Sarawak, (Beccari). Borneo (Motley).

Distribution, Malay peninsula and Java.

C. striolata, Engler. Sarawak, (Beccari). Rejang, Sibü (Haviland 2375).

The tube of the spathe which is very slender appears to have been white, the narrow lanceolate limb purple. Fruit on a pedicel $\frac{1}{2}$ inch long sub-globose $\frac{3}{8}$ inch long, seeds $\frac{1}{4}$ inch long curved acute narrow reticulate.

Endemic.

C. grandis, n.sp. Petioles 6 to 14 inches long, leaf blade ovate cordate, obtuse 3-4 inches long, 2-3 inches wide closely and finely dotted and sometimes striolate. Peduncle 1 inch long. Spathe tube 15 inches long $\frac{1}{4}$ inch wide, dilated portion $\frac{1}{2}$ inch long, limb lanceolate caudate $2\frac{1}{2}$ inches long $\frac{3}{8}$ inch wide at base, apparently yellow in the mouth and purple above smooth.

Sarawak. Jungle stream path to Matang (Haviland 2319) Sept. 23. 1892.

Endemic, the biggest species I have ever seen except *C. ciliata*.

C. pallidinervia, Engler. Sarawak (Beccari).

Endemic.

C. longicauda, Engler. Sarawak (Beccari).

Endemic.

C. bullosa, Engler. Sarawak (Beccari).

I saw a quantity of what appeared to be this plant in the river at Bidi, near the Loban Angin, but could see no flowers. Saribas (Haviland 2079).

Endemic. Engler's figure Malesia, pl. 27, i, is of a young spathe. When adult the blade is longer than the tube and very narrow. Fruit white $\frac{1}{4}$ inch wide peduncle 3 inches.

C. Lingua, Engler. Sarawak (Beccari). Rejang Sibü (Haviland 3129).

Endemic.

C. auriculata, Engler. Sarawak (Beccari).

Endemic.

C. spathulata, Engler. Sarawak (Beccari).

Endemic.

TYPHONIUM.

Small aroids usually weeds of cultivation.

T. trilobatum, Schott. Sarawak (Beccari). Bau, (Ridley).

T. motleyanum, Schott. Borneo (Motley).

AMORPHOPHALLUS.

Engler records only one species of this genus from Borneo, but there are doubtless more. They are seldom met with in flower, I found two in leaf.

A. giganteus, Bl. Sarawak (Beccari).

Distrib. Java.

ARISÆMA.

A. umbrina, n.sp. Root stock short with numerous woolly roots.

Leaves 4 or 5; young ones ovate acuminate entire 3 inches long, $1\frac{1}{2}$ wide; older ones trifid lobes oblong or lanceolate acuminate, 5 inches long $1\frac{1}{4}$ inch wide, base narrowed into a petiolule $\frac{1}{2}$ inch long, tip acute with a slender awl-shaped point $\frac{1}{4}$ inch long, side lobes macquilateral nearly sessile, nerves 3 or 4 pairs joining an intramarginal one, petiole 5 inches long, all light green. Peduncle 7 inches long, spathe tube green $1\frac{1}{4}$ inch long, limb ovate $1-1\frac{1}{2}$ inch long, tipped with a slender point $\frac{1}{4}$ inch long, deep brown spotted with light green. Spadix appendage filiform 2 inches long

green. Male flowers in groups of 4 or 5, stamens shortly stalked, numerous.

Borneo, Sarawak. Matang, alt. 1500 feet.

A very distinct plant with its dark brown hood spotted with yellowish green.

A. filiforme, Bl., var. *chlorospatha*, Hallier.

Central Borneo at Liang Gagang, (Hallier).

HOMALOMENA.

H. (§ *Eu.-homalomena*). *paludosa* Griff. Sarawak, Kuching (Barttel).

Common in the Malay peninsula.

H. sagittifolia, Jungh. Sarawak on Matang (Ridley).

South Borneo Mt. Gintang (Korthals) Labuan (Motley).

var *pontedericæfolia*. Sarawak Kuching (Haviland 3134).

H. propinqua, Schot, to which Engler refers the plants collected by Korthals and Motley quoted above is probably this species which is common in the Malay peninsula.

H. Beccariana, Engler. Sarawak (Beccari).

Engler describes this as allied to *H. rostrata* Griff, and *H. Miqueliana* Schott and suggests that the three might be combined into one species, *H. Miqueliana* Schott is based on a plant collected by Korthals in Southern Borneo.

H. insignis. Ill. Hort 1885. t 560.

Introduced from Borneo. From the description in Nicholson's Dict. Gardening Supplement, this seems near *H. paludosa*.

H. Sarawakensis, n.sp. Stem woody creeping ascending with long roots. Petioles 3-4 inches long rather slender sheath 2 inches long red, blade oblong lanceolate cuneate at the base narrowed into the petiole tip acute 5-7 inches

long, 3 inches wide, primary nerves 6 or 7 pairs, not very distinct. Peduncle 4 inches long more slender than the petiole, Spathe 2 inches long constricted above the female inflorescence, swollen basal part longer than the narrower upper part.

Sarawak Bidi (Ridley 11714).

Endemic.

H. Borneensis, n. sp. Stem stout petiole 7-7½ inches long sheathing about half its length, blade ovate base broad rounded, apex cuspidate, nerves 8 pairs conspicuous on the under surface, alternate 8 inches long, 6 inches, wide. Peduncle 6 inches long, Spathe 4 inches long, constricted above the middle thick nearly an inch through below, blade shortly cuspidate. Spadix rather slender, male portion 1¼ inch long white, upper part of female nude or with scattered female flowers, 1 inch long.

Sarawak Kuching (Ridley).

Endemic, near *H. sagittifolia* Jungh. but the leaves are not at all cordate.

H. aromatica, var. *cordata* Schott.

Sarawak. (Beccari). Kwala Kapuas, (Grabowski) (Engler Malesia 282).

These plants are probably *H. caerulea* Jungh, a common Malay peninsula and Javanese plant, but it is possible that this species is only a form of Roxburgh's *H. aromatica* which is only recorded from Tencasserim and Chittageng.

H. Havilandi, n. sp.

Petiole slender 6 to 8 inches long very shortly sheathing, blade ovate with a broad indented base, hardly cordate apex cuspidate 8-10 inches long 5-6½ inches wide, nerves very unnumerous fine and inconspicuous. Peduncle slender 5-6 inches long, spathe narrow 2 inches long ¼ inch wide slightly constricted above the female portion. Male portion slender 1½ inch long. Female shorter ½ inch.

Sarawak Bongo range near Penkalan Ampat (Haviland 102). Endemic.

The form of the leaves is that of *H. borneensis* but the venation is very close and fine, there being practically no primary nerves. The spadices are also much smaller and narrower but in the specimens are quite young.

H. fasciata, n. sp.

Leaves solitary narrow lanceolate long acuminate 6-7 inches long $1\frac{1}{2}$ inch wide narrowed to the base above deep green with a central white feather, beneath pale green, with 8 pairs of elevated nerves, petiole 7-8 inches long slender terete. Spadices rising from a basal narrow sheath 3 inches long, peduncle $1\frac{1}{2}$ -2 inches long slender spathe $1\frac{1}{4}$ inch long curved base swollen $\frac{3}{8}$ inch through, above narrowed acuminate all pale green. Spadix little shorter, terminal portion cylindric acuminate $\frac{5}{8}$ inch long white of sterile hexagonal flowers, below $\frac{1}{4}$ inch narrower of oblong male flowers, 4 celled anthers, below a whorl of white irregular sterile flowers, then a short bare portion, and whorls of green subglobose sessile, pistils with a short thick style and punctiform stigma.

Sarawak. Bidi Woods, fl. Oct. 1903 (Ridley).

Endemic. A pretty plant, which I brought alive to Singapore and flowered in the Botanic Gardens.

H. saxorum, Miq.

Borneo (Korthals).

H. truncata, Hook. fil?

Chamæcladon truncatum, Schott., var. *deltoideum*, Engl.

S. Borneo. Kapuas on the river, Riam Horas (Grabowski).

There is some doubt as to whether this plant is the same as Hooker's *H. truncatum*, a native of Mergui.

H. ovalifolium, Ridl. *Chamæcladon ovalifolium*, Schott.

Borneo (Korthals).

H. (§ Chamæcladon), paucinervia, n. sp.

Stem about 4 inches tall with long roots. Leaves numerous lanceolate gradually tapering from the middle to the base apex subacute, pale beneath $3\frac{1}{2}$ inches long 1 inch wide, primary nerves 4 pairs alternate, petiole slender 1-2 inches long, sheath short broad red $\frac{1}{4}$ inch long. Spathes small $\frac{1}{2}$ inch long on a very slender peduncle of equal length, spathe oblong with a short beak. Spadix a little shorter, male portion fourtimes as long as the female cylindric. Female flowers very few in two or three whorls. Pistil ovoid, stigma discoid.

Sarawak, Matang (Ridley).

One of the narrow leaved wet rock species after the style of *H. angustifolium* and as near the *Chamæcladon pygmaeum* of Engler's Araceæ No. 96 as anything but differing not only in foliage but in the very few female flowers.

H. intermedium, n. sp.

Stem 1 inch long with numerous thick grey roots. Leaves numerous obliquely elliptic acute minutely mucronate at the tip, narrowed slightly toward the base 5 inches long 2 inches wide or smaller. Nerves fine about 14 pairs, secondary nerves few and indistinct, petiole slender $2-2\frac{1}{2}$ inches long, sheathing for about $\frac{1}{2}$ its length. Peduncle of spadix 3 inches long slender, Spathe $1-1\frac{1}{2}$ inch long nearly $\frac{1}{4}$ inch through narrowed above the female portion about half way up, and cuspidate at the tip.

Sarawak, Matang (Ridley) Endemic.

This plant is about the size and habit of *H. Griffithii* but very different in its their textured fine nerved leaves and the long slender peduncles, and spathe narrowed in the middle. It seems to be intermediate between the section *Euhnomalomena* and *Chamæcladon*.

H. crassinervia, n. sp.

Petioles stout 6 inches long, sheathing for more than half their length, blade lanceolate acuminate base unequal narrowed 11 inches long 3 inches wide, keel thick primary nerves about 20 pairs, secondary nerves very numerous with short transverse bars. Peduncle 3 inches long, spathe 3 inches long, constricted a little above the middle lower part broad and thick limb of spathe with a cusp $\frac{3}{8}$ inch long spadix $2\frac{1}{2}$ inches long. Male 1 inch portion rather slender cylindric. Stamens moderately large, a short narrowed portion of abortive flowers between that and the female portion. Pistils in about 20 whorls.

Sarawak. Matang (Ridley). Endemic.

H. lancea, n. sp.

Stem short. Leaves few petiole slender 6-8 inches long, sheathing from 2-3 inches blade lanceolate acuminate with a long point narrowed at the base into the petiole 7 inches long, $1\frac{1}{2}$ inches wide rather their nerves ascending rather distant 5 pairs distinct on the lower surface, alternate, no visible transverse reticulations. Peduncle 4 inches long rather slender. Spathe thick 2 inches long constricted above the female part of spadix, rather more than $\frac{1}{2}$ its length, tip shortly cuspidate male portion of spadix rather slender, anthers small.

Sarawak, Matang (Ridley). Endemic.

H. ovata, Engler. Sarawak (Beccari).

H. subcordata, Engler. Sarawak (Beccari).

H. punctulata, Engler. Sarawak (Beccari).

H. (§ *chamæcladon*) *pumila*, var. *purpurascens*. *Chamæcladon pygmaeum*, Engl. ?

Borneo (Korthals); Sarawak, Matang (Ridley); S. Borneo, Kapuas (Grabowski).

var. *latifolium*, (Engler).

Sarawak (Beccari).

This little plant is common in the Malay Peninsula. The plant distributed by Engler under his number and figure (Araceæ 96) does not seem to be this species.

H. Griffithii, Hook. fil. Borneo (Motley).

var. *obliquatum*, *H. obliquatum*, Hook. fil., *Chamaecladon obliquatum* Schott.

Sarawak (Beccari).

var. *acuminata*. Leaves ovate with a long point, or elliptic acuminate, nerves less conspicuous than in typical *H. Griffithii*.

Sarawak. Bau (Ridley 11713).

This plant in the form of leaf approaches *H. trapezifolia*, Hook. fil., but has the small spathes of *H. Griffithii*, which is a most variable plant, several forms of which have been separated into species on account of the form of the leaf, I have seen nothing exactly like this variety from the Peninsula, but hardly like to separate it as a species.

H. humilis, Hook. fil.

Is recorded from Borneo in the flora of British India but without specific locality or collector's name. It is common in the hills of the Malay Peninsula.

AGLAONEMA.

A. palustre, Teysm. Sarawak (Beccari).

Common in the tidal mud of the Kuching river, (Ridley).

Distrib. Malay Peninsula, Sumatra.

A. schottianum, Miq. Sarawak (Beccari), Matang (Ridley); Southern Borneo (Korthals *vide* Engler).

A. pictum, Kunth. Sarawak (Beccari).

Malay Peninsula.

A. oblongifolium, Schott. Sarawak (Beccari); Kuching (Haviland 972), Road to Bau, Ridley.

Common, Malay Peninsula.

COLOCASIA.

C. antiquorum, Schott. Sarawak (Beccari).

A common cultivated plant, probably not native in this part of the world.

C. gigantea, Hook. I saw plants of what I believe to be this at the Byte Estate near Sandakan, British North Borneo.

ALOCASIA.

A. indica, Schott. Sarawak (Beccari).

A common cultivated plant. Var. *metallica*, Borneo (Miquel).

A. macrorrhiza, Schott. Sarawak (Borneo).

This is a commonly cultivated plant.

A. Lawii, Hook. fil. Common, on limestone rocks, Ball. Sarawak (Ridley).

A. Lawii is common on limestone rocks in Borneo and in the Malay Peninsula, and Beccari could hardly have failed to find it.

A. denudata, Engler. Matang.

I found very fine plants of this common Malayan plant on Matang, which though not in flower at the time of my visit were certainly this species. The variety *Thibautiana*, Hart, with white reticulating veins occurs in Borneo.

A. longiloba, Miq. Sarawak (Beccari), is almost certainly this plant. Miquel's description however is not complete enough to determine what he meant.

A. Beccarii, Engler. Sarawak (Beccari). Matang at the top (Ridley).

Distrib. Malay Peninsula.

A. Korthalsi, Schott. Sakumbang (Korthals).

A very little known species, described only from leaf specimens.

A. scabriuscula, N. E. Brown, Gard. Chron. 1879, II. 296.

Introduced into cultivation from Borneo.

A. cuprea, Koch. Locality unknown.

Introduced into cultivation from Borneo.

A. Villeneuvei, Lind. and Rod. Ill. Hort, 1887, p. 59, Pl. XXI. Sarawak, Bau (Ridley 11715).

This has dark green leaves, with the petioles spotted with dark brownish red. The flowers are not known, but the spathe in fruit is about 1 inch long and $\frac{3}{4}$ inch wide, white or rose pink, on a peduncle 5 inches long.

SCHISMATOGLOTTIS.

Sch. barbata, Engler. Sarawak, Kuching (Beccari).

Sch. crispata, Hook. fil. Sarawak, Bau, etc. (Ridley).

Sch. asperata, Engler. Sarawak (Beccari)

var. *albomaculata*. Sarawak, (Beccari).

Sch. Beccariana, Engler.

var. *oblonga*. Sarawak (Beccari).

var. *cuspidata*. Sarawak (Beccari).

var. *albolineata*. Sarawak (Beccari).

var. *angustifolia*. S. Borneo, Kapuas Grabourki.

Apparently a common and variable plant but I have failed to recognise what was intended by this species.

Sch. modesta, Schott. Borneo (Korthals).

Common near Sungei Assun, Kapuas (Hallier).

Sch. calyptrata, Zoll and Mor.

Form *concolor*. Mid Borneo, at Amai-Ambit and Liang Gagang (Hallier).

Form *trivittata*. Central Borneo (Hallier).

A common species in the Malay Peninsula and over the Archipelago.

Sch. variegata. Of Gardens, is said, Nicholson's Dictionary of Gardening, to be *S. neo-guineensis* which is a variety of *S. calyptrata*. It was introduced from Borneo.

Sch. pusilla, Engler. Sarawak (Beccari).

West Borneo (Jagori, fide Hallier).

Sch. acuminatissima, Schott. var. *concinna*. South Borneo (Korthals).

Probably a form of *S. calyptrata* says Engler, but the description which is very incomplete hardly fits any form of that species.

Sch. decora, Bull, Gard. Chron. 1884, t. 711. Borneo.

Sch. ovata, Schott. Borneo (Korthals).

Sch. conoidea, Engler. Sarawak (Beccari).

Sch. Motleyana, Engler. *Apatemone Motleyana*, Schott. Labuan (Motley).

Sch. longispatha. Bull. Cat. 1881. III. Hort. XXIX t. 466.

I obtained this pretty species in the Bidi Woods, Sarawak, and it flowered in the Botanic Gardens in Singapore, in March and April, 1904. The leaves are

broad, dark green with a central white bar. The spadix is 3 inches long, the spathe greenish white, of which the tubular portion is $1\frac{1}{2}$ inch long. The appendage of the spadix cylindric subacute white $\frac{3}{4}$ inch long of irregular abortive flowers. Male portion short $\frac{1}{4}$ inch long, anthers one- rarely 2-celled. Female flowers more numerous thick oblong green, stigma pulvinate, sessile, abortive flower few irregularly flattened club shaped or spatulate, tipped pink, little shorter than the pistils.

Sch. multiflora, n. sp.

Rhizome short thick with numerous leaves. Leaves dark green lanceolate acuminate, narrowed at the base, 8-9 inches long, 2-3 inches wide. 14-18 nerved, petiole 6 inches long purple, numerous red brown sheaths at the base spadix. On a peduncle 2 inches long. Spathe at first narrow acuminate 4-5 inches long white, tubular portion 1 inch long pale green limb recurved, when open broadly lanceolate acuminate. Male spadix cylindric 3 inches long, flowers very numerous, all fertile, no appendage of barren flowers. Flowers oblong, anther cells distant. Female portion 1 inch long no nude portion between, pistils ovoid narrowed slightly upwards towards the discoid stigma.

Sarawak, Matang, in rocks in a stream abundant, (Ridley 11582) Endemic. Remarkable for its long spadix and very numerous flowers.

Sch. pulchra, N. E. Br.

Rhizome short, leaves ovate acuminate base narrowly cordate $3\frac{1}{2}$ inches long 2 inches wide, petiole 2 inches long back rounded edges above straight sheath short and broad sides patent, tips rounded, blade light green mottled grey. Peduncle very short. Spathe $1\frac{1}{2}$ inches long base dark green $\frac{3}{4}$ inch long carried down the peduncle and adnate to it, lamina 1 inch long pale green cuspidate. Spadix nearly as long as the spathe, appendage cylindric $\frac{3}{8}$ inch long obtuse white of irregular ovoid bodies, male

portion narrower $\frac{1}{2}$ inch long anthers lobed of 2 distant cells, rather scattered, then a few abortive females. Female portion as long as the male. Pistils oblong shortly stalked, stigma discoid, about 7 irregular rows of females rather distant. Back of female portion adnate to stipes. Sarawak at Bidi (Ridley). This plant originally described from cultivated plants, was sent to the Botanic Gardens Singapore by Mr. Chatterjee of Calcutta as *Sch. crispata* from which however it is very distinct.

Sch. caulescens, n. sp.

Stem 2-4 inches long, base rooting, upper part ascending, with alternate leaves a quarter of an inch apart. Leaves elliptic lanceolate to ovate subacute at the tip, base rounded 2-4 inches long $1-1\frac{1}{4}$ inch wide, minutely pustular on both surfaces, nerves primary 10 pairs, midrib scurfy, the basal nerves run parallel to the edge forming a distinct margin at the tip, petiole $1\frac{1}{2}$ inch long or much shorter in the upper leaves sheathing for from nearly one half of its length in the lower leaves, to $\frac{3}{4}$ of its length in the upper shorter petioles, tips of sheath free. Spathe from the upper axil, on a peduncle about $\frac{1}{2}$ inch long slender, base of spathe $\frac{3}{4}$ inch long narrowed to the base. Spadix slender 1 inch long male portion slender cylindric flowers apparently fertile to the tip.

Sarawak, Bidi. (Ridley).

Apparently allied to *Sch. conoidea* Engl. but the long petioles distinguish it from this. The elongate stem is unusual but does occur in the genus.

As often happens in *Schismatoglottis* I was unable to find fully developed spadices in several species. One plant collected at Bau in Sarawak seemed closely allied to *S. brevipes* Hook. fil and *S. wallichii* of the Malay peninsula but had remarkably long petioles over 6 inches long with an ovate often cordate leaf 3 inches long beneath, and blotched with dark green above. Another of the same section had leaves as large as those of *Sch.*

Wallichii but very short petioles sheathing for half the length or more. The spathe complete but too much crushed in drying resembles that of *Sch. calyptrata* Zoll. I met with it on Matang. A plant closely allied to the last named species was met with at Bat and may possibly be a form of *S. calyptrata*. The leaves are broadly ovate elliptic, and cordate at the base, the lobes rounded and very close together.

PIPTOSPETHA, N. E. BR.

P. insignis, Br. Sarawak, Lundu (Micholitz).

P. marginata, Engler. Sarawak (Beccari).

P. elongata, Engler. Sarawak (Beccari). S. Borneo, Kapuas (Grabowski).

Distrib. Malay Peninsula.

P. Grabowskii, Engler. Sarawak. Rejang Belaga (Haviland). S. Borneo, Mindai-Pramassan, on the river Telanakan (Grabowsky).

MICROCASIA, BECC.

M. pygmaea, Beccari. Sarawak (Beccari).

M. elliptica, Engler. Malesia, vol. I. TXXV f. 2-8. Sarawak (Beccari).

ANADENDRUM, SCHOTT.

A. montanum, Schott. Sarawak (Beccari).

Common in the Malay Peninsula from Tenasserim southwards.

A. affine, Schott. Sarawak (Beccari).

SCINDAPSUS.

Sc. pictus, Hassk. Cat. Bogor 1844-58. Sarawak in Woods (Ridley). Near Tegora (Haviland 2568).

Common in the Malay Peninsula. Haviland's plant is a very small form.

Sc. hederacea, Schott. South Borneo (Korthals).

Sc. crassipes, Engler, and the var. *Beccarii*, (*Sc. Beccarii* Engler). Sarawak (Beccari), Limestone rocks, Bau (Ridley), common. On rocks Malay Peninsula.

Sc. geniculatus, Engler. Sarawak (Beccari).

Sc. coriaccens, Engler. Sarawak (Beccari).

Sc. longipes, Engler. Sarawak (Beccari).

Sc. rupestris, n. sp.

Stems $\frac{1}{4}$ inch through creeping on the ground. Leaves erect 3-4 in a tuft long petioled, blade coriaceous lanceolate acuminate acute base broad or slightly narrowed 5-7 inches long $1-1\frac{3}{4}$ inch wide, primary nerves hardly more conspicuous than the secondary ones, no transverse nervules, secondary nerves numerous and close, petiole 6-8 inches long rather slender ribbed, sheathed for $\frac{3}{4}$ its length, sheath narrowed papery, knee small $\frac{1}{4}$ inch. Spathe boat shaped white 1 inch long $\frac{3}{8}$ inch through sub-obtuse on a peduncle 2 inches long. Spadix $\frac{3}{4}$ inch long cylindric blunt sessile. Pistils rounded small. Stigma sunk elliptic.

Sarawak Bau (Ridley 11853). Creeping on limestone rocks at Bau.

Sc. Havilandi, n. sp.

Stem $\frac{1}{6}$ inch through. Leaves long petioled blade their lanceolate long acuminate base cuneate 9 inches—12 long $2\frac{1}{4}-2\frac{1}{2}$ wide, primary nerves 10 pairs fine but distinct, secondary nerves numerous fine, transverse nervules fine distinct but few, petiole 4-8 inches long slender sheathing narrowly about $\frac{1}{3}$ of its length. Spadix peduncle 1 inch long. Spathe oblong boat-shaped 2 inches long $\frac{3}{4}$ inch wide beaked. Spadix $1\frac{1}{2}$ inch long thick cylindric nearly

sessile. Pistils rounded rhomboid. Style short but distinct and columnar. Stigma discoid.

Sarawak Saribas (Haviland 2089).

July 1892. Endemic.

RAPHIDOPHORA.

Species with entire leaves.

R. Lobbia, Schott Bonplandia V. p. 45. Borneo (Korthals).
Common in the Malay Peninsula.

R. sylvestris, Engler Prodr 239. Sarawak (Beccari), and var
obtusata, same collector.

Distrib. Java, New Guinea.

R. Peepla, Schott. Bonplandia V. 1857 p. 45. Kapuas River
at Tumbangtliang (Grabowski).

Distrib. India, Ceylon and Moluccas.

R. minor, Hook. fil. Sarawak, Kuching scrambling over bushes
near the river. Common in the Malay Peninsula.

R. migrscens, n. sp.

Stem woody stout flexuous $\frac{3}{8}$ inch through angled, internodes $1\frac{1}{2}$ inch long. Leaf coriaceous drying black, blade oblong lanceolate acuminate somewhat oblique, base rounded 7 inches long by 2 wide, nerves very fine and close, primary ones not distinct, petiole 3 inches long grooved rather slender hardly winged at all. Knee short and thick. Peduncle stout $2\frac{1}{2}$ -3 inches woody. Spathe not seen, spadix 3 inches long very thick cylindric blunt. Pistils rounded 6 angled at the tip. Style none. Stigma round sunk, pulvinate.

Sarawak, Matang (Ridley, Bartlett).

Bartlett's specimens have narrower more lanceolate leaves, but it is evidently the same plant and from the same locality.

R. elliptica, n. sp.

Leaf elliptic coriaceous apex mucronulate base rounded 6-7 inches long $3-2\frac{1}{2}$ wide nerves very numerous and fine, primary nerves no stronger than secondary ones, petiole 5-6 inches long, narrowly sheathed to the base of the blade. Peduncle about 1 inch long, spathe 3-4 inches long $\frac{1}{2}$ inch thick boat-shaped cuspidate, cusp $\frac{1}{2}$ inch long. Spadix stout sessile. Pistils rounded at the top obscurely hexagonal, stigma round sunk.

Sarawak Bau (Ridley). Allied to *R. Maingayi*, and *R. pteropoda* Teysm. Endemic.

R. fluminea, n. sp.

Stem creeping $\frac{1}{6}$ inch through. Leaves elongate lanceolate gradually acuminate narrow base acuminate 12-15 inches long $1-1\frac{1}{2}$ wide midrib prominent, primary nerves very numerous about 20 pairs, transverse nervules conspicuous on the back, petiole slender 3-4 inches long sheathing only at the base, knee $\frac{1}{4}$ inch, long. The blade bent at an angle with the knee. Peduncle $2\frac{1}{2}$ inches long slender, spathe $1\frac{1}{2}$ inch long boat-shaped cuspidate cusp $\frac{3}{8}$ inch long. Spadix as long as the body of the spathe, cylindric $\frac{1}{6}$ inch thick pistils very small $\frac{1}{16}$ inch across rounded 6 angled. Stigma slightly elevated pulvinate.

British North Borneo. At Bongaya, creeping on rocks over hanging the Labuk river (Ridley). Endemic.

Species with Pinnatifid Leaves.

R. Huegelii, Schott. Sarawak, (Beccari). Distrib. Malay Peninsula.

R. maxima, Engler. Bull. Soc. Tosc. di Rt. 1879, 269. Sarawak (Beccari). Distrib. New Guinea.

R. Beccarii, Engler. Sarawak (Beccari). Distrib. Malay Peninsula.

R. tenuis, Engl. Jahrb. 1. 181. Sarawak (Beccari). Matang near the top (Ridley).

LASIA.

L. spinosa, Thw. Sarawak (Beccari).

A common tidal-mud plant occurring in India, China the Malay Peninsula and Islands.

CYRTOSPERMA.

C. lasioides, Griff. *C. merkusii*, Schott. Sarawak, (Beccari).

Common in damp open country all over the Malay Peninsula.

C. ferox, Linden and N. E. Br.

Introduced from Borneo and figured in the Illustration Horticole. I met with a plant much resembling this in dense forests in Sungei Siput, Perak, in a jungle stream.

PODOLASIA.

P. stipitata, N. E. Br.

First introduced from Borneo by Mr. Curtis, and described in the Gardener's Chronicle in 1892. It inhabits dry woods usually at an elevation of about 2000 feet and occurs in many parts of the Malay Peninsula.

POTHOS.

P. Barberianus Schott., Aroid I. p. 24, t. 53.

Labuan (Barber, Motley). Sarawak (Beccari). Distrib. Malay Peninsula.

P. leptostachyus, Schott., Prodr. 571. Borneo (Motley.) Distrib. Java.

P. Beccarianus, Engler. Prodr. 92. Sarawak, (Beccari).

P. Motleyanus, Schott., Aroid. 1. 25, t. 55. Borneo (Motley and Barber).

P. insignis, Engl. Sarawak (Beccari).

P. brevistylus, Engl. Sarawak (Beccari) near Kuching (Haviland 971).

P. longus, n. sp.

Shrub, stems $\frac{1}{16}$ inch through. Leaves elliptic long acuminate base narrowed or not 6-7 inches long $1\frac{1}{2}$ inch wide, keel strongly elevated, marginal nerve not far from the edge, nerves five numerous, reticulations fine distinct, petiole (knee) $\frac{1}{4}$ inch long, sheath 2 inches long narrow prolonged above the knee. Peduncle graceful decurved $2\frac{1}{2}$ inches long. Spathè linear subacuminate mucronulate 9 inches long. $\frac{3}{8}$ inch wide. Spadix terete 6 inches long, on a slender stalk $\frac{1}{2}$ inch long. Petals and sepals with very narrow elongate tips much longer than wide. Stamens very small reniform 2 celled. Stigma small pulvinate not supported on a style.

Sarawak four miles from Kuching; (Haviland d. 9. p.f. 934).

This is remarkable not only for its very long spathe and spadix, but for the curious narrow long tips of the perianth lobes which are almost linear (grey edged paler when dry) and hardly one-fourth as wide as they are long.